Remarks

Claims 1-3, 8, 10, and 16-20 have been cancelled.

Claim 6, 7 and 9 have been amended. Thus, claims 4-7, 9, and 11-15 are currently pending.

Claims 7, 11, and 13-15 were rejected under 35 U.S.C 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 7 has been amended to recite that the isolated nucleic acid fragment is sufficient to increase lysine content in a plant cell. Support for this can be found in the specification on page 98 at lines 3-24 (first full paragraph). Thus, no new matter has been added. Withdrawal of this ground of rejection is respectfully requested in view of the foregoing clarification.

Claim 9 has been amended and it is respectfully submitted that it is drawn to an elected invention. Support for the increased lysine content can be found throughout the entire specification. Thus, no new matter has been added.

Claims 4, 6, 7, 11 and 13-15 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Submitted herewith in Appendix A is a comparison of the claimed amino acid sequence (SEQ ID NO:122), encoded by SEQ ID NO:120, with the bifunctional *Arabidopsis* LKR-SDH protein (SEQ ID NO:111). This comparison demonstrates that the sequence of the invention has about 60% homology with the published *Arabidopsis* sequence (SEQ ID NO:111).

Attention is kindly invited to Tang et al. (*Plant Cell* 9:1305-1316 (1997), copy previously submitted) and Epelbaum et al. (*Plant Mol. Biol.* 35:735-748 (1997), copy previously submitted), which disclosed the *Arabidopsis* LKR-SDH sequence. Bifunctional and monofunctional versions of the LKR-SDH protein have been identified in mammals and plants.

The aforementioned publications discuss the LKR and SDH domains of the bifunctional protein that were identified by homology to the corresponding monofunctional proteins from yeast, showing 25% and 37% identity, respectively and by expressing the LKR and SDH domains of the bifunctional LKR-SDH separately in bacteria or yeast. The expression studies showed that the separate LKR and SDH

domains conferred the expected activity and specifictiy to the transformed cells. The LKR and SDH domains have been boxed in Appendix A to faciliate review of the enclosed Appendix A. It should also be noted that, in addition to the LKR and SDH domains, a high degree of homology is also observed in the intermediary or 'spacer' region of the bifunctional LKR-SDH polypeptide.

As has been described in Dr. Carl Falco's Declaration, dated August 24th, 2000, (previously submitted), a part of the corn LKR-SDH sequence (SEQ ID NO:122) was successfully used in cosupression studies and cosupression constructs to produce seeds having an increased accumulation of lysine. This increase in lysine was directly related to the cosupression of LKR-SDH. The information presented in this response does indeed make a correlation between the teachings of Tang et al., Dr. Falco's Declaration and the claimed sequences.

The above discussion and comments are believed to be equally apposite with respect to the rejection of claims 4-7, 11 and 13-15 under 35 USC §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, as stated in the last office action.

It is respectfully submitted that the claims are now in form for allowance which allowance is respectfully requested.

Please charge any fees associated with the filing of this response or credit any overpayment to Deposit Account 04-1928 (E. I. du Pont de Nemours and Company).

Respectfully submitted,

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Date: October 9, 2003